

CLAIMS

1. An objective lens drive device comprising:
- an objective lens through which laser light is transmitted onto a recording
 - 5 surface of a disk-shaped recording medium to read and play information recorded on the disk-shaped recording medium;
 - magnets;
 - a focusing coil to which a driving electric current is supplied during a focusing adjustment of the laser light;
 - 10 a tracking coil to which a driving electric current is supplied during a tracking adjustment of the laser light;
 - a base including a support shaft that protrudes toward an optical axis direction of the objective lens, and at least a pair of magnet attachment parts to which the magnets are attached; and
 - 15 a movable unit including:
 - a first member having a holder part that holds the objective lens, and a cylinder part by which the movable unit is supported on the support shaft rotatably about and slidably along the support shaft; and
 - a second member having a coil bobbin part that is positioned opposite to
 - 20 the magnets and around which is wound one of the focusing coil and the tracking coil, and end wind-around parts around which is wound one of an end part of the focusing coil and an end part of the tracking coil and affixed by soldering, said second member is joined with the first member, wherein said first member is formed of a material having greater rigidity and slidability than said second member, and said second member is
 - 25 formed of a non-electrically-conductive material having greater heat resistance than said first member.

2. The objective lens drive device according to claim 1, wherein a liquid crystal polymer resin that contains carbon fiber is used as the material of said first member.

3. A disk device comprising:

- 5 a disk table on which a disk-shaped recording medium is mounted;
 a drive motor for rotating the disk-shaped recording medium;
 an objective lens through which laser light is transmitted onto a recording surface of the disk-shaped recording medium to read and play information recorded on the disk-shaped recording medium; and
- 10 an objective lens drive device holding the objective lens, said objective lens drive device comprises:
 magnets;
 a focusing coil to which a driving electric current is supplied during a focusing adjustment of the laser light;
- 15 a tracking coil to which a driving electric current is supplied during a tracking adjustment of the laser light;
 a base including a support shaft that protrudes toward an optical axis direction of the objective lens, and at least a pair of magnet attachment parts to which the magnets are attached; and
- 20 a movable unit including:
 a first member having a holder part that holds the objective lens, and a cylinder part by which the movable unit is supported on the support shaft rotatably about and slidably along the support shaft; and
 a second member having a coil bobbin part that is positioned
- 25 opposite to the magnets and around which is wound one of the focusing coil and the tracking coil, and end wind-around parts around which is wound one of an end part of the focusing coil and an end part of the tracking coil and affixed by soldering, said

second member is joined with the first member, wherein said first member is formed of a material having greater rigidity and slidability than said second member, and said second member is formed of a non-electrically-conductive material having greater heat resistance than said first member.

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4. The disk device according to claim 3, wherein a liquid crystal polymer resin that contains carbon fiber is used as the material of said first member.

5. A disk device for at least one of recording information on and reading information from a disk-shaped recording medium by using laser light, said disk device comprising:
10 an objective lens through which the laser light is transmitted onto the disk-shaped recording medium;

a movable unit that holds the objective lens; and

a base that supports the movable unit, wherein

15 said base including:

a support shaft provided along an optical axis direction of the objective

lens for supporting the movable unit; and

magnets, and

said movable unit including:

20 a holder part that holds the objective lens, said holder part being formed of a first material;

a supported part supported on the support shaft rotatably about the support shaft and slidably along the support shaft, said supported part being formed of the first material;

25 a first coil that generates a magnetic field for causing the movable unit to rotate in a rotational direction about the support shaft;

a second coil that generates a magnetic field for causing the movable unit to move in an axial direction slidably along the support shaft;

a coil bobbin part around which are wound the first coil and the second coil, said coil bobbin part being formed of a second material; and

5 end attachment parts to which are attached end parts of the first coil and the second coil, said end attachment parts being formed of the second material, wherein said first material has greater rigidity than said second material, and said second material is non-electrically-conductive.

10 6. The disk device according to claim 5 wherein,

 said first material has greater slidability than said second material.

7. The disk device according to claim 5 wherein,

 said second material has greater heat resistance than said first material.

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8. The disk device according to claim 5 wherein,

 said movable unit is formed by joining together a member that consists of said first material and a member that consists of said second material.

20 9. The disk device according to claim 5 wherein,

 said movable unit is formed by two-color molding from said first material and said second material.

10. The disk device according to claim 5,

25 said first material is a liquid crystal polymer resin that contains carbon fiber.

11. The disk device according to claim 5 wherein,

said second material is a resin that contains glass fiber.

12. A disk device for at least one of recording information on and reading information from a disk-shaped recording medium by using laser light, said disk device comprising:

5 an objective lens through which the laser light is transmitted onto the disk-shaped recording medium;

a movable unit that holds the objective lens; and

a base that supports the movable unit, wherein

said base including:

10 a support shaft provided along an optical axis direction of the objective lens for supporting the movable unit; and

magnets, and

said movable unit including:

15 a holder part that holds the objective lens, said holder part being formed of a first material;

a supported part supported on the support shaft rotatably about the support shaft and slidably along the support shaft, said supported part being formed of the first material;

20 a first coil that generates a magnetic field for causing the movable unit to rotate in a rotational direction about the support shaft;

a second coil that generates a magnetic field for causing the movable unit to move in an axial direction slidably along the support shaft;

a coil bobbin part around which are wound the first coil and the second coil; and

25 end attachment parts to which are attached end parts of the first coil and the second coil, said end attachment parts being formed of a second material, wherein

said first material has greater rigidity than said second material, and said second material has greater heat resistance than said first material.

13. A disk device for at least one of recording information on and reading information
5 from a disk-shaped recording medium by using laser light, said disk device comprising:
an objective lens through which the laser light is transmitted onto the disk-shaped recording medium;
a movable unit that holds the objective lens; and
a base that supports the movable unit, wherein
10 said base including:
a support shaft provided along an optical axis direction of the objective lens for supporting the movable unit; and
magnets, and
said movable unit including:
15 a holder part that holds the objective lens;
a supported part supported on the support shaft rotatably about the support shaft and slidably along the support shaft, said supported part being formed of a first material;
a first coil that generates a magnetic field for causing the movable unit to
20 rotate in a rotational direction about the support shaft;
a second coil that generates a magnetic field for causing the movable unit to move in an axial direction slidably along the support shaft;
a coil bobbin part around which are wound the first coil and the second coil; and
25 end attachment parts to which are attached end parts of the first coil and the second coil, said end attachment parts being formed of a second material, wherein

said first material has a greater slidability than said second material, and said second material has greater heat resistance than said first material.

FIG. 2 is a cross-sectional view of the second embodiment of the present invention.